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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,453	05/02/2005	Hironori Takahashi	046124-5380	4138
55694 7590 07/31/2007 DRINKER BIDDLE & REATH (DC) 1500 K STREET, N.W. SUITE 1100 WASHINGTON, DC 20005-1209			EXAMINER MONDT, JOHANNES P	
			ART UNIT 3663	PAPER NUMBER
			MAIL DATE 07/31/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/533,453	Applicant(s) TAKAHASHI ET AL.	
	Examiner Johannes P. Mondt	Art Unit 3663	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 May 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) 1, 3 and 4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2, 5 and 6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/2/05 and 8/19/05</u> .                                      | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

Notice on Non-Compliant Amendment mailed 4/19/07 has been withdrawn with apologies from examiner. The Amendment and Response to Election Requirement filed 2/16/07 thus forms the basis for this office action. In said Amendment Applicant added new claims 5 and 6.

### ***Election/Restrictions***

Applicant's election without traverse of Species II in the reply filed on 2/16/07 is acknowledged. Applicant indicates that claims 2, 5 and 6 read on the elected Species II. Accordingly, claims 2, 5 and 6 have been examined.

### ***Information Disclosure Statement***

The examiner has considered the items listed in the Information Disclosure Statements filed 5/2/05 and 8/19/05. Signed copies of the respective Forms PTO-1449 have been enclosed in this office action.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. The term "porous" in ***claims 2, 5 and 6, through line 1 of claim 2***, is a relative term which renders the claim indefinite. The term "porous" is not defined in a quantitative sense by the claim, the specification does not provide a definite standard, as opposed to anecdotal indications, for ascertaining the requisite

degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Any substance has some degree of porosity.

Applicant does not provide a definite criterion by which to judge whether a particular substance is sufficiently porous to meet the claim limitation. Therefore, the meets and bounds of the claimed subject matter are indefinite and vague.

***Claim Rejections - 35 USC § 102/103***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. ***Claims 2 and 5*** are rejected under 35 U.S.C. 102(b) as anticipated by

Wakselman et al (WO 91/08180), or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wakselman et al in view of Sato (JP 04055333 A1).

The rejection is offered subject to the noted indefiniteness under 35 USC 112, second paragraph, on the meets and bounds of “porous”. Applicant does not provide any definite bounds, and has only included examples, as a result of which a quantification of

what is meant by "porous" is merely anecdotal. The problem with this is that any given substance has some degree of porosity. Examiner will consequently distinguish two cases: "porous" as meaning any degree of porosity, and "porous" as meaning an explicitly taught beneficial property, and accordingly will provide two alternative rejections as follows:

Under 35 U.S.C. 102(b):

*Wakselman et al* teach a deuteron containing substance comprising a base film mainly composed of halogen-containing organic compound (fluorine-containing tetrahalogenoethylene: see English abstract), wherein a deuterated organic compound (deuterated methanol) is impregnated (through the process of condensation on said halogen-containing organic compound: see English abstract) in at least part of said base film (see page 6, lines 31-32).

The distinction between "substance" and "target" is one of zero patentable weight, being a distinction of intended use. The limitation "target", other than implicit of a substance, is a statement of intended use not serving to patentably distinguish the claimed structure over that of the reference as long as the structure of the cited reference is capable of performing the intended use. See MPEP 2111-2115. See also MPEP 2114 that states:

"A claim that contains a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all of the structural limitations of the claim *Ex parte Masham*, 2 USPQd 1647."

"Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531."

"Apparatus claims cover what is device is, not what a device does" Hewlett-Packard versus Bausch & Lomb Inc., 15 USPQ2d 1525, 1528."

In the underlying case, high-intensity laser light could be made incident on said substance, whereupon deuterons would indeed be produced because the conditions therefor are in place, as admitted by Applicant in the specification (see, for instance both claims 1 and 2: they differ in the lack of a limitation on porosity and consequent stratification of the halogen-containing organic compound and the deuterated organic compound. However. In both cases a deuteron generating target is claimed, and hence a fortiori disclosed.

Under 35 U.S.C. 103(a):

*The text of the rejection above under 35 U.S.C. 102(b) is herewith incorporated by reference. In addition it is noted that:*

*Wakselman et al do not necessarily teach any specific degree of porosity of said base film. However, it would have been obvious to specifically include the limitation "porous" as claimed in view of Sato, who, in a patent document on the production of optical fiber base material (title and English abstract), hence analogous to Wakselman et al, teach the selection of porous optical fiber base material (see "Constitution" in English abstract) so as to obtain a uniform distribution of refractive index (see "Purpose" of English abstract). Motivation to include the teaching by Sato in this regard in the invention by Wakselman et al immediately derives from the desirability of a uniform*

refractive index, refractive index being the main parameter of interest in light-transmitting instrumentation.

*On claim 5:* said halogen containing organic compound by Wakselman et al is a fluorine-substituted hydrocarbon (see the presence of fluorine (F) in the chemical formula describing the substitution in the English abstract).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. ***Claims 2 and 5*** are rejected under 35 U.S.C. 103(a) as being unpatentable over Maksimchuk et al (US 2002/0172317 A1) in view of Blackwell (4,093,886). N.B. The rejection is made subject to the noted indefiniteness under 35 U.S.C. 112, second paragraph, explained overleaf. Applicant does not provide any definite bounds, and has only included examples, as a result of which a quantification of what is meant by "porous" is merely anecdotal.

*On claim 2:*

*Maksimchuk et al* teach a deuteron generating target 14 (see title, abstract, Figure 1, and paragraphs [0003] and [0016]-[0029], in particular [0017]) comprising a porous base film 16 ([0017]) (N.B.: Mylar is porous to charged particles, as evidenced by Blackwell, see his abstract ("permit charged particles emitted from the particle

source to pass essentially uninfluenced therethrough”) mainly composed of an organic compound (“a thin film such as a Mylar film”, i.e., such as a polyethylenterephthalat-polyesterfoil or BOPET film: see [0017]), wherein a deuterated organic compound 18 (deuterated plastic layer: [0017]) is impregnated in at least part of said porous base film (N.B.: it is noted that “impregnated” at least results from the use of said target through high-intensity laser irradiation and consequent heating resulting in thermal diffusion, the target being used many times, in particular in pulsed mode ([0051])).

*Maksimchuk et al do not necessarily teach* the limitation that said organic compound to be mainly composed of a halogen-containing organic compound.

*However*, it would have been obvious to include said limitation in view of Blackwell, who, in a patent inter alia on the selection of a thin film 9 (col. 4, l. 45-61) (1/4 to 1/2 mil thick: N.B.: one mil = 1/1000 of one inch: i.e., 6.35  $\mu\text{m}$  to 12.7  $\mu\text{m}$ ; while Maksimchuk et al teach 10  $\mu\text{m}$ )) for its dielectric property and charged-particle permeability (see abstract and col. 4, l. 50-57) considers Mylar equivalent with Teflon (i.e., polytetrafluoroethylene or PTFE) (see col. 4, l. 46- col. 5, l. 2, especially, col. 4, l. 63-65). (N.B.: Teflon is an organic compound and contains the halogen fluorine and hence is a halogen-containing organic compound). But these properties are important also for the base film in Maksimchuk, because charged particles as are produced through laser irradiation must be able to traverse said base film so as to limit the risk of electric field breakdown, as is known by those of ordinary skill in the electrical art. The considerations by Blackwell cited above provide powerful motivation to consider Teflon as an equivalent material embodiment for the base film in Maksimchuk et al. Applicant



is reminded in this regard that it has been held that mere selection of known materials generally understood to be suitable to make a device, the selection of the particular material being on the basis of suitability for the intended use, would be entirely obvious. In re Leshin 125 USPQ 416.

*On claim 5:* Teflon is a fluorine-substituted hydrocarbon in which all hydrogen is substituted by fluorine ( $C_nF_{2n}$ ).

6. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Maksimchuk et al in view of Blackwell as applied to claim 2, and further in view of Amini (6,130,926). N.B. The rejection is offered subject to the noted indefiniteness under 35 USC 112, second paragraph, on the meets and bounds of "porous". Applicant does not provide any definite bounds, and has only included examples, as a result of which a quantification of what is meant by "porous" is merely anecdotal.

*Maksimchuk et al and Blackwell combined teach a deuteron generating target apparatus comprising: a deuteron generating target according to claim 2 (see rejection of claim 2 overleaf, herewith included in its entirety in the rejection of claim 6 by reference); a laser source 10 ([0017]) capable of irradiating said deuteron target on a predetermined area of said deuteron generating target.*

*Maksimchuk et al nor Blackwell necessarily teach the claimed holder (line 3) and driving mechanism (lines 6-8). However, it would have been obvious to include the limitations on target holder and driving mechanism in view of Amini, who, in a patent on*

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nuclear target irradiation (title, abstract and "Background of the Invention"), hence analogous art, teaches the inclusion of a target holders 13/14 (col. 5, l. 37-47) holding the target on a predetermined surface, and a driving mechanism moving the target on said predetermined surface so as to change a relative position of the beam irradiated area on said target (col. 9, l. 10-34 and claims 4-5 of Amini). *Motivation* to include the teaching by Amini derives from the enhanced control of target area so as to enhance heat dissipation (see Amini, col. 9, l. 10-17).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johannes P. Mondt whose telephone number is 571-272-1919. The examiner can normally be reached on 8:00 - 18:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack W. Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JPM  
July 21, 2007

Primary Patent Examiner:

  
Johannes Mondt (TC 3600 / AU 3663)